US-PAT-NO: 6222881

DOCUMENT-IDENTIFIER: US 6222881 B1

TITLE: Using numbers of non-zero

quantized transform signals

and signal differences to

determine when to encode video

signals using inter-frame or

intra-frame encoding

DATE-ISSUED: April 24, 2001

INVENTOR-INFORMATION:

NAME CITY

STATE ZIP CODE COUNTRY

Walker; Mark Hillsboro

OR N/A N/A

APPL-NO: 08/ 335550

DATE FILED: November 7, 1994

PARENT-CASE:

This is a continuation-in-part of application Ser. No. 08/324,923 filed

Oct. 18, 1994 now U.S. Pat. No. 5,802,213.

US-CL-CURRENT: 375/240.03, 375/240.02,

375/240.04

ABSTRACT:

A transform is applied to a region of a current video frame to generate transform signals corresponding to the region. An activity measure is

generated using the transform signals. activity measure is then used to determine whether to encode the region as a skipped region. The region is encoded in accordance with that determination to generate an encoded bit stream for the region. In a preferred embodiment, the transform signals are DCT coefficients and the activity measure is a weighted sum of the DCT coefficients, where the weighting of the low-frequency DCT coefficients is greater than the weighting of the high-frequency DCT coefficients. The region is encoded as a skipped region if the activity measure is less than a threshold value; otherwise, the region is encoded as either an inter encoded region or an intra encoded region.

20 Claims, 22 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 22

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Detailed Description Text - DETX (69):

This temporal prefilter may produce some visible artifacts. For example, moving objects may leave residues that persist

moving objects may leave residues that persist until another local change

occurs. In addition, initial noise may get frozen and not decay. One solution

is to make the temporally-filtered pixels converge to the long-term **moving**

average. To avoid significantly increasing the
entropy code size, the

convergence process preferably has the following characteristics:

Detailed Description Text - DETX (197):

Table III contains the preferred VLC codes for the non-zero DCT AC coefficients in intra blocks of reference frames.

A DCT AC coefficient value of 98 (which would consist of fourteen 1's) is not permitted in order to avoid confusion with either the sequence start code or the frame start code.

Detailed Description Paragraph Table - DETL (15):
TABLE III VLC Codes for Non-Zero DCT AC

Coefficient Values for Intra
Blocks of Reference Frames VALUE BITS CODE 1 2 0S
2 3 10S 3-4 5 110XS 5-6
6 1110XS 7-10 8 11110XXS 11-18 10 111110XXXS
19-34 12 1111110XXXXS 35-97 14
11111111XXXXXXS